

UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF ILLINOIS  
EASTERN DIVISION

IN RE: AIMSTER COPYRIGHT  
LITIGATION

MASTER FILE NO. 01 C 8933

MDL 1425

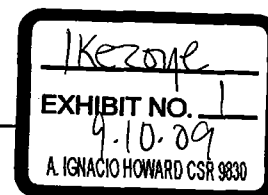
JUDGE MARVIN E. ASPEN

DECLARATION OF VANCE IKEZOYE  
IN SUPPORT OF PLAINTIFFS'  
PROPOSED PRELIMINARY  
INJUNCTION ORDER

DECLARATION OF VANCE IKEZOYE

I, Vance Ikezoye, the undersigned, declare:

1. I am the President and Chief Executive Officer of Audible Magic Corporation. I make this declaration in support of Plaintiffs' Proposed Preliminary Injunction Order in order to demonstrate that, contrary to the public statements by the defendants in this matter, there are methods presently available to prevent unauthorized recordings from being distributed on peer-to-peer systems like those operated by defendants. I have personal knowledge of the following facts and, if called and sworn as a witness, could competently testify thereto.



1           2. Audible Magic is a technology and services company that provides content  
 2 management and information services to the media and entertainment industries. The company  
 3 offers a range of standard information services as well as customized project development  
 4 based upon its patented media identification and classification technology, its media monitoring  
 5 and management software, and an extensive and continually updated reference database of  
 6 copyrighted music. One of the services Audible Magic currently provides is monitoring radio  
 7 broadcasts for customers such as SESAC, a major performing rights organization. Audible  
 8 Magic is using its fingerprinting technology (described more fully below) to identify the songs  
 9 broadcast by terrestrial radio stations, to assist in determining royalty distributions to artists.  
 10 Audible Magic also utilizes its fingerprinting technology in a song copyright verification  
 11 service to the CD replication industry (companies that duplicate CDs) to enable them to identify  
 12 copyrighted recordings prior to reproduction. The replicators then utilize this information to  
 13 ensure that the customer has authorization from the copyright holders to copy the recordings.  
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 17           3. The core of Audible Magic's work is audio recognition technology that classifies  
 18 sound based on its perceptual characteristics. A company called Muscle Fish, LLC, which  
 19 began in 1992 and which Audible Magic acquired in July 2000, originally developed the  
 20 technology. This technology relies on Mel-Filtered Cepstral Coefficients ("MFCCs"), which  
 21 are measurements that accurately characterize and model audio in the same way the ear  
 22 perceives sound. When a person hears any sound, the human ear perceives the spectra of the  
 23 sound. (A spectrum measures amplitude as a function of frequency.) We have found that  
 24 measuring the shape of the spectrum is the method of identifying uniqueness in a segment of  
 25 audio that is the most accurate and robust, i.e., able to work in many different environments and  
 26 despite changes in format and acoustic and digital modifications. Thus, Audible Magic's  
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1 technology analyzes the shape of the spectrum inherent in a digital audio file. The MFCC  
2 describes the shape of that spectrum, adjusted for the way that the human ear actually perceives  
3 sound.

4  
5 4. The analysis performed by this technology produces a set of numeric values called  
6 a "feature vector" or "digital fingerprint," which is absolutely unique to a particular master  
7 recording. In essence, each digital fingerprint identifies a master recording, much as a human  
8 fingerprint identifies a person. The fingerprinting technology works on all forms of audio,  
9 regardless of the digital format into which the audio has been encoded.  
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11  
12 5. The fingerprint remains constant through typical audio processing, such as the  
13 compression that occurs when an audio file is encoded into digital formats, including MP3, the  
14 most popular format. Thus, one fingerprint can be used to recognize all manipulated forms of  
15 the original audio, just as law enforcement technology permits identification of a suspect even  
16 if a fingerprint is smeared. The fingerprints are accurate enough that they can differentiate  
17 between various live and studio performances of a single song.  
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20 6. Audible Magic's technology also accurately identifies songs regardless of the bit  
21 rate of the file. The bit rate is the number of bits (small pieces of data) that occur in a given  
22 amount of time, usually a second. Thus, a bit rate is usually expressed in some multiple of bits  
23 per second - for example, kilobits, or thousands of bits per second (Kbps). The higher the bit  
24 rate, the larger the file and the better the sound quality. Users can set the bit rate at several  
25 different levels, but the identification technology will work in a range of bit rates from highly  
26 compressed 20 Kbps to CD quality, over 300 Kbps. This range includes the bit rates used by  
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1 regular users of P2P services, who generally prefer the higher quality that comes with higher bit  
2 rates, usually at least 56 Kbps and more often much higher.

3  
4 7. The fingerprints are very small. Only 20 seconds of a master recording is needed  
5 to create the fingerprint. A typical reference fingerprint is around one kilobyte (1 Kb), whereas  
6 a typical file encoded in MP3, the most popular digital format for sound recordings, is about  
7 three megabytes (3Mb), 3,000 times larger than the fingerprint, and a typical WAV file  
8 (another popular digital format for sound recordings) is about 30 megabytes (30 Mb), 30,000  
9 times larger than the fingerprint. The small size of the fingerprint makes it much easier to store  
10 and much faster to transmit and check the fingerprints of unknown audio files against a  
11 reference database of fingerprints of known recordings.  
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14 8. The fingerprint technology is very secure and cannot be tampered with. As long as  
15 the audio is not distorted to the point that the listening experience is significantly affected, the  
16 fingerprint will positively identify the recording.  
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19 9. I am familiar with peer-to-peer systems ("P2P") like the ones operated by  
20 defendants in this case. We understand the basic technology and architectures; and have  
21 discussed designs to apply Audible Magic's technology to P2P. Audible Magic's technology  
22 can be used to block unauthorized recordings from being distributed and copied in this type of  
23 system, as described below.  
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26 10. First, Audible Magic possesses a database of fingerprints from approximately 3.4  
27 million copyrighted songs. This database roughly represents the music available for purchase in  
28 North America and consists of music from the five major and over 500 independent music

1 labels. Fingerprints from this large archive would be used to populate an Audible Magic  
2 Identification Server with a reference database. Then, the company's fingerprinting software  
3 would be installed either on each user's computer or on a server operated by the system operator  
4 (e.g., Aimster/Madster). In either case, the fingerprinting technology would create a fingerprint  
5 of each digital recording that a user sought to distribute and transmit it over the Internet to the  
6 reference database, located on the Audible Magic Identification Server. The unknown  
7 fingerprint is then compared to the fingerprints in the reference database.  
8

9  
10 11. What happens next depends on whether the system is designed as a "filter-in"  
11 system or a "filter-out" system. In a "filter-in" system, the reference database would include  
12 fingerprints of only those recordings that the copyright holders have authorized for distribution.  
13 In that case, if the fingerprint of the unknown audio file matches a fingerprint in the reference  
14 database, the user would be permitted to distribute and copy the audio file, but would be  
15 blocked from distributing it if there is no match. (The blocking could occur by disabling the  
16 unauthorized file on the user's hard drive.) If a "filter-out" system was desired, the reference  
17 database would include fingerprints of those recordings that are not authorized for distribution,  
18 and a match would prevent distribution, while no match would permit distribution.  
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21 12. The Audible Magic technology can easily handle millions of requests for  
22 identification against a reference database of hundreds of thousands of recordings. Audible  
23 Magic's technology currently achieves above 98% correct identification rates, with an  
24 insignificant level of false positive identifications. Our goal, which we are continually working  
25 towards, is 100% correct identification. In addition, when combined with other file  
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identification methods such as MD5 hashes, a comprehensive system would make the entire verification even faster, more accurate, and less expensive.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct and that this Declaration was executed on September 10, 2002, at Los Gatos, California.

  
 Vance Ikezoye